

PRL-TR-65-8

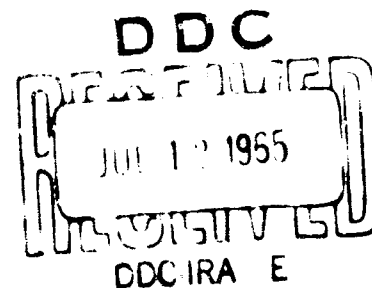
April 1965

AD617335

# Performance on Airman Qualifying Examination by Regional Areas and by Sex

By

William B. Lecznar



PERSONNEL RESEARCH LABORATORY  
AEROSPACE MEDICAL DIVISION  
AIR FORCE SYSTEMS COMMAND  
Lackland Air Force Base, Texas

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## PERFORMANCE ON AIRMAN QUALIFYING EXAMINATION BY REGIONAL AREAS AND BY SEX

### I. INTRODUCTION

The Airman Qualifying Examination (AQE) is used by the USAF Recruiting Service as one determinant of qualification for voluntary enlistment in the Air Force. Development of the test and some data on its validity have been reported previously (Thompson, 1958; Edwards & Hahn, 1962; McReynolds, 1963). Some population characteristics derived from administration of the test have also been summarized (Lecznar, 1962; Lecznar & Tupes, 1963).

Beginning with AQE-D, the Air Force has enlisted new recruits on a selective basis. Prior to April 1958 enlistment qualification was based largely on meeting a given score on the Armed Forces Qualification Test (AFQT) and physical examination. Testing for classification and assignment to technical and on-the-job training was done at a military training center following enlistment. Beginning in April 1958 this procedure was modified so that determination of enlistment eligibility was based not only on AFQT but also on AQE in terms of a minimum level of aptitude in one of four areas. An enlistment was made on a selective basis and the enlistee entered against a specific job area; he was in effect selected and classified before entering the Air Force, and then received a final assignment at the training center after enlistment. With implementation of AQE-62 in October 1962, the USAF Recruiting Service instituted a high school testing program in which a number of schools across the country have participated. This procedure has increased the number of potential enlistees tested with AQE from about 140,000 applicants in 1959 to near 130,000 applicants plus 395,000 high school students for a total of 525,000 in 1964. This total is expected to increase further in 1965.

The purpose of this report is to present some data on aptitude distributions for AQE-F and AQE-62, the successor to Form F, and to provide some population and correlational statistics by geographical regions of the country.

### II. PROCEDURE

#### AQE-F Data Collection

Test answer sheets, AQE-F, were matched against a listing of persons enlisted during the period 1 January through 30 September 1962. This listing numbered 89,334 and included male and female recruits. In matching against the total file of some 226,000 examinees, the yield was 67,640 or 75.7 percent of the enlistees for the time period specified, split 66,574 males and 1,067 females. From the remaining nonenlistees and unmatched enlistees a sample of 5,291 cases were pulled at random to establish a so-called census group. The matched cases were scored for the 11 subtests and the four AQE aptitude indexes (AIs) were derived (Mechanical, Administrative, General, Electronics).

The male group was broken down into 10 subsamples representing geographical areas as reflected by the second digit of the Air Force Service Number. These subsamples were reduced randomly to 1,000 cases in each (except the group from outside the continental United States, which had only 297 cases). Intercorrelation matrices were computed for the 10 male subsamples and for the female sample. For the census group, only aptitude index distributions were derived.

## AQE-62 Data Collection

For an initial group represented by some 543,000 test papers from the field administration of AQE-62 for the period 1 October 1962 (the date AQE-62 was implemented) to 31 December 1963, a separation was made into four groups:

1. Males tested before 1 March 1963 (the approximate date on which a revised composite score conversion table became effective).
2. Males tested after 1 March 1963
3. Females tested before 1 March 1963
4. Females tested after 1 March 1963

Random samples were drawn to yield approximately 5,400 cases from the two male groups and 2,750 from each of the female groups. Frequency distributions of the raw and percentile (indexes) scores were obtained and cumulative percentages, means, and standard deviations were derived.

## III. RESULTS

### AQE-F Tabulations

Intercorrelations of the 15 AQE variables for the 10 male subsamples and the female sample are given in Appendix I. Table 5 defines the areas of the country making up the regional number breakout. For ease in making comparisons with earlier data on geographical differences (McReynolds & Nichols, 1953; Thompson, 1958), Table 1 shows mean values for the 11 subtests and 4 aptitude indexes by 9 continental regions. Table 2 is an extract of just the AI intercorrelations for all 10 geographical areas. Table 3 gives a distribution of the AI percentiles for the census group.

Table 1. Mean Scores on AQE-F by Enlistment Regions

(N = 1000 per area, males only)

AQE-F Variable	No. Items	Enlistment Region								
		1	2	3	4	5	6	7	8	9
Subtests										
Clerical Matching	50	48.62	48.55	48.48	48.26	48.17	48.50	48.46	48.11	48.64
Numerical Operations	78	36.80	36.71	37.64	35.12	36.05	36.85	36.44	33.81	34.98
Pattern Comprehension	16	9.95	10.23	9.75	9.12	10.05	10.41	10.37	9.45	10.82
Hidden Figures	15	8.58	8.39	8.37	7.57	7.81	8.76	8.88	8.07	8.69
Technical Data	10	6.41	6.59	6.42	6.00	6.31	6.58	6.62	5.99	6.64
Arithmetic Reasoning	29	9.55	9.53	9.32	8.99	9.35	9.70	9.63	8.91	9.70
Word Knowledge	30	20.46	19.97	18.94	16.81	18.53	19.50	19.63	16.68	19.99
Electrical Information	15	8.47	8.57	8.31	8.15	8.33	8.53	8.89	7.90	8.59
General Mechanics	15	7.81	7.43	7.43	7.27	7.78	8.31	9.03	7.74	8.78
Tool Functions	15	9.85	9.44	9.33	8.35	9.72	10.33	10.51	8.89	10.56
Mechanical Principles	15	7.77	7.85	7.57	7.48	7.90	8.29	8.67	7.52	8.54
Aptitude Indexes										
Mechanical	--	55.98	54.05	53.27	48.91	54.34	59.36	62.43	51.90	61.27
Administrative	--	65.86	64.86	64.73	59.71	62.35	64.54	64.45	58.12	63.46
General	--	61.36	60.51	58.78	53.24	56.80	60.90	61.23	54.49	61.28
Electronics	--	53.76	55.38	52.76	49.28	53.30	55.87	56.76	49.16	57.26

## AQE-62 Tabulations

Complete AI distributions (percentile scores) for the four groups are contained in Appendix II.<sup>1</sup> For comparison with some earlier data (Leczmar, 1962), mean AIs for the groups have been extracted and are shown in Table 4.

## IV. CONCLUSIONS

With reference to the data on AIs by region of enlistment (Table 1), the mean values obtained tend in the directions noted by Thompson (1958) on a group of 1957 enlistees; that is, enlistees from the Northeast were high on the Administrative and General indexes. The North Central and Midwest areas averaged high on the Mechanical AI, with the Pacific Coast and Far West regions showing the highest Electronics scores. Examination of the subtest means shows, first, that the high scores follow the AI patterns (since the AIs are based on those tests) and, second, that the lower Atlantic Coast, Gulf Coast, and Southwest are lowest on all the subtests.

Table 2. Aptitude Index Intercorrelations by Enlistment Regions

AI	Region 1			Region 2			Region 3			Region 4			Region 5		
	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4
1 Mech	.26	.61	.68	.24	.62	.67	.29	.63	.69	.32	.67	.69	.28	.62	.68
2 Admin		.69	.52		.69	.54		.69	.51		.72	.57		.70	.56
3 Gen			.75			.76			.72			.74			.73
4 Elec			--			--			--			--			--
AI	Region 6			Region 7			Region 8			Region 9			Region 0		
	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4
1 Mech	.32	.64	.69	.32	.68	.69	.40	.66	.70	.34	.67	.73	.26	.57	.66
2 Admin		.72	.54		.69	.53		.72	.63		.72	.57		.70	.55
3 Gen			.73			.73			.75			.75			.70
4 Elec			--			--			--			--			--

The AI intercorrelations in Table 2 show a few notable differences in level, but precisely the same patterns between indexes. For example, the relation between Mechanical-Administrative in region 2 versus region 8 and between Administrative-Electronics in region 3 and region 8 suggest enlistees from region 8 have a greater tendency for equal ability across the four indexes. The subtest intercorrelations show this same tendency.

Mean AIs for this 1962 census group (Table 3) are about one scale interval lower (5 percentile points) in the Mechanical and Electronics area than those values reported for a sample of 1961 examinees (Leczmar, 1962) while the General and Administrative AI means are about the same for the two years. This is probably a result of excluding females from the 1961 data but letting them enter the 1962 census group as they may have appeared in the random sampling.

<sup>1</sup>Appendix III, "Distributions of raw composite scores, AQE-62," is available to interested requesters from Personnel Research Laboratory (PRS), Lackland AFB, Tex.

**Table 3. Frequency Distribution of AQE-F Aptitude Index Percentile Scores for the Census Group**

(N = 5291)

Per- cent- ile	Mech	Admin	Gen	Elect	Per- cent- ile	Mech	Admin	Gen	Elect
95	139	278	231	222	35	243	325	314	351
90	118	234	164	72	30	283	165	312	353
85	177	329	173	148	25	345	173	494	489
80	218	417	215	236	20	474	288	287	306
75	151	200	229	208	15	751	216	250	485
70	190	286	400	236	10	295	169	149	537
65	284	443	265	121	5	147	22	68	14
60	357	337	307	238	1	48	62	36	6
55	231	292	331	311					
50	110	433	333	307	M	41.63	54.53	49.04	42.96
45	394	317	357	310					
40	336	305	376	341	SD	25.53	24.82	24.24	25.04

Females perform less well on the Mechanical-Electronic tests, as evidenced by the mean AIs shown as part of the matrix of intercorrelations for females in Appendix I, Table 16. In effect, it appears that the 1961 and 1962 populations making themselves available as potential enlistees are quite similar in level of aptitude as measured by AQE-F.

The results obtained from analysis of AQE-62 scores must be reviewed with the following points in mind:

1. Though standardized and equated to AQE-F, AQE-62 represents a shift in test forms and a variation in test content (Edwards & Hahn, 1962).
2. There was a change in conversion tables for the Administrative AI for AQE-62 five months after its implementation.
3. With AQE-62 we have the beginning of the Recruiting Service program of high school testing.

**Table 4. Mean Aptitude Indexes, AQE-62, by Sex Groups**

Group	N	Percentile Mean Scores			
		Mechanic	Administr	General	Electron
Male, before 1 Mar 63	5442	50.22	62.84	56.30	48.27
Male, after 1 Mar 63	5373	54.51	56.59	56.99	49.28
Female, before 1 Mar 63	2826	24.55	62.39	52.58	33.43
Female, after 1 Mar 63	2719	25.92	56.13	53.38	34.19

Assuming the equality of AIs for Form F and Form 62 as a function of the equipercentile method of norming AQE-62, then it appears that the high school testing program has reached a population which, overall, has slightly lesser aptitude than the enlistee group of 1961 but



higher than the examinee group of 1962 (compare General AI means in Tables 1 and 3 with Table 4 values). This is not an unlikely state of affairs, since the high school testing, by its nature and use in Recruiting Service operations, includes large numbers of students who enter colleges rather than terminating their education on high school graduation; thus, from Table 1 (selective enlistment program) to Table 3 (all applicants for enlistment) to Table 4 (all applicants plus high school testing) there are clear indications that selective enlistment and the high school program are beneficial to quality of Air Force enlistments.

*APPENDIX I*

**TEST DATA FOR AQE-F SAMPLES**

**TABLES 5-17**

Table 5. Key to Regional Groups

Group	N in Group Before Random Sampling	Geographical Area Included
0	297	Alaska, Hawaii, Puerto Rico, Canal Zone, USAFE
1	4185	Maine, New Hampshire, Rhode Island, Massachusetts, Connecticut
2	6696	New York, Vermont, New Jersey
3	9541	Delaware, Pennsylvania, Maryland, Virginia
4	10432	Alabama, Florida, N. Carolina, S. Carolina, Tennessee, Georgia, Mississippi
5	5848	Kentucky, Ohio, W. Virginia
6	8305	Illinois, Indiana, Michigan, Wisconsin
7	6950	Colorado, Iowa, Kansas, N. Dakota, S. Dakota, Minnesota, Missouri, Nebraska, Utah, Wyoming
8	6252	Arkansas, New Mexico, Louisiana, Texas, Oklahoma
9	8068	Arizona, California, Idaho, Montana, Nevada, Oregon, Washington

Table 6. Intercorrelation Matrix AQE-F, Area 0

Variable	1	2	3	4	5	6	7	8	9 <sup>b</sup>	10	11	12	13	14	15
1 Clerical Matching		.21	.04	.16	.06	.09	.09	-.04	-.06	-.08	-.04	.01	.34	.16	.04
2 Numerical Operations	.21		.23	.31	.38	.44	.26	.17	-.02	-.11	.08	.11	.88	.43	.38
3 Pattern Comprehension	.04	.23		.41	.36	.40	.24	.33	.26	.23	.49	.50	.31	.45	.78
4 Hidden Figures	.16	.31	.41		.35	.39	.25	.27	.11	.06	.28	.57	.37	.74	.47
5 Data Interpretation	.06	.38	.36	.35		.55	.26	.35	.22	.08	.36	.37	.46	.48	.68
6 Arithmetic Reasoning	.09	.44	.40	.39	.55		.54	.46	.23	.09	.45	.41	.68	.80	.74
7 Word Knowledge	.09	.26	.24	.25	.26	.54		.42	.25	.15	.38	.36	.62	.73	.47
8 Electrical Information	-.04	.17	.33	.27	.35	.46	.42		.51	.43	.64	.62	.35	.48	.73
9 General Mechanics	-.06	-.02	.26	.11	.22	.23	.25	.51		.65	.60	.76	.10	.23	.43
10 Tool Functions	-.08	-.11	.23	.06	.08	.09	.15	.43	.65		.53	.73	-.03	.12	.32
11 Mechanical Principles	-.04	.08	.49	.28	.36	.45	.38	.64	.60	.53		.81	.24	.45	.67
12 Mechanical AI	.01	.11	.50	.57	.37	.41	.36	.62	.76	.73	.81		.26	.57	.66
13 Administrative AI	.34	.88	.31	.37	.46	.68	.62	.33	.10	-.03	.24	.26		.70	.55
14 General AI	.16	.43	.45	.74	.48	.80	.73	.48	.23	.12	.45	.57	.70		.70
15 Electronics AI	.04	.38	.78	.47	.68	.74	.47	.73	.43	.32	.67	.66	.55	.70	
Mean	48.93	36.70	10.46	7.82	6.79	9.20	16.61	7.88	7.07	8.29	7.40	48.62	61.68	54.93	53.79
SD	2.72	13.26	3.98	4.19	2.10	3.62	6.49	3.05	2.80	3.09	3.18	20.72	18.14	20.05	21.36

Table 7. Intercorrelation Matrix AQE-F, Area 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.26	.12	.11	.14	.18	.12	.05	.00	-.02	.08	.06	.41	.17	.14
2 Numerical Operations	.26		.18	.23	.28	.47	.25	.11	-.04	-.04	.08	.08	.87	.41	.29
3 Pattern Comprehension	.12	.18		.49	.46	.44	.28	.44	.33	.35	.52	.56	.32	.53	.83
4 Hidden Figures	.11	.23	.49		.38	.37	.24	.32	.24	.22	.36	.64	.32	.74	.53
5 Data Interpretation	.14	.28	.46	.38		.55	.38	.36	.20	.21	.40	.40	.44	.56	.70
6 Arithmetic Reasoning	.18	.47	.44	.37	.55		.50	.44	.25	.18	.47	.41	.70	.81	.72
7 Word Knowledge	.12	.25	.20	.24	.38	.50		.41	.21	.14	.39	.32	.60	.71	.48
8 Electrical Information	.05	.10	.44	.32	.36	.44	.41		.56	.50	.66	.65	.30	.50	.74
9 General Mechanics	.00	-.04	.33	.24	.20	.25	.21	.56		.66	.59	.79	.10	.29	.45
10 Tool Functions	-.02	-.04	.35	.22	.21	.18	.14	.50	.66		.57	.78	.06	.23	.43
11 Mechanical Principles	.08	.08	.52	.36	.40	.47	.39	.66	.59	.57		.81	.29	.52	.68
12 Mechanical AI	.06	.08	.56	.64	.40	.41	.32	.65	.79	.78	.81		.26	.60	.68
13 Administrative AI	.41	.87	.32	.32	.44	.70	.60	.30	.10	.06	.29	.26		.69	.52
14 General AI	.17	.41	.53	.74	.56	.81	.71	.50	.29	.23	.52	.60	.69		.75
15 Electronics AI	.14	.29	.83	.53	.70	.72	.48	.74	.45	.45	.68	.68	.52	.75	
Mean	48.62	36.80	9.95	8.58	6.41	9.55	20.46	8.47	7.81	9.85	7.77	55.98	65.86	61.36	53.76
SD	3.01	13.00	4.18	4.08	2.19	3.59	5.81	3.17	3.29	3.27	3.25	22.11	17.64	19.25	22.85

Table 8. Intercorrelation Matrix AQE-F, Area 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.26	.14	.11	.17	.18	.18	.09	.07	.02	.09	.09	.42	.20	.18
2 Numerical Operations	.26		.17	.19	.35	.52	.31	.11	-.03	-.08	.11	.07	.68	.43	.33
3 Pattern Comprehension	.14	.17		.47	.38	.41	.29	.40	.32	.35	.51	.54	.30	.51	.81
4 Hidden Figures	.11	.19	.47		.32	.33	.28	.33	.30	.24	.42	.66	.28	.73	.50
5 Data Interpretation	.17	.35	.38	.32		.58	.44	.35	.20	.18	.38	.35	.50	.57	.68
6 Arithmetic Reasoning	.18	.52	.41	.33	.58		.54	.40	.23	.18	.46	.38	.73	.80	.72
7 Word Knowledge	.18	.31	.29	.28	.44	.54		.48	.29	.20	.44	.38	.64	.75	.54
8 Electrical Information	.09	.11	.40	.33	.35	.40	.48		.56	.54	.66	.66	.30	.51	.73
9 General Mechanics	.07	-.03	.32	.30	.20	.23	.29	.56		.70	.61	.81	.12	.34	.46
10 Tool Functions	.02	-.08	.35	.24	.18	.18	.20	.54	.70		.59	.79	.05	.26	.45
11 Mechanical Principles	.09	.11	.51	.42	.38	.46	.44	.66	.61	.59		.83	.31	.56	.69
12 Mechanical AI	.09	.07	.54	.66	.35	.38	.38	.66	.81	.79	.83		.24	.62	.67
13 Administrative AI	.42	.88	.30	.28	.50	.73	.64	.30	.12	.05	.31	.24		.69	.54
14 General AI	.20	.43	.51	.73	.57	.80	.75	.51	.34	.26	.56	.62	.69		.76
15 Electronics AI	.18	.33	.81	.50	.68	.72	.54	.73	.46	.45	.69	.67	.54	.76	
Mean	48.55	36.71	10.23	8.39	6.59	9.53	19.97	8.57	7.43	9.44	7.85	54.05	64.86	60.51	55.38
SD	3.19	14.46	4.22	4.16	2.18	3.75	6.30	3.14	3.34	3.41	3.43	23.24	19.34	20.05	22.55

Table 9. Intercorrelation Matrix AQE-F, Area 3

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.25	.06	.14	.07	.14	.13	.01	-.03	-.05	.04	.05	.40	.20	.08
2 Numerical Operations	.25		.14	.22	.31	.45	.22	.12	-.01	-.04	.12	.11	.87	.39	.29
3 Pattern Comprehension	.06	.14		.43	.41	.43	.31	.48	.34	.36	.58	.57	.29	.51	.83
4 Hidden Figures	.14	.22	.43		.31	.34	.27	.31	.23	.20	.34	.63	.32	.74	.46
5 Data Interpretation	.07	.31	.41	.31		.54	.33	.34	.22	.18	.38	.36	.43	.51	.67
6 Arithmetic Reasoning	.14	.45	.43	.34	.54		.48	.45	.28	.24	.48	.44	.68	.78	.71
7 Word Knowledge	.13	.22	.31	.27	.33	.48		.44	.26	.20	.39	.36	.59	.73	.50
8 Electrical Information	.01	.12	.48	.31	.34	.45	.44		.56	.53	.65	.66	.32	.50	.76
9 General Mechanics	-.03	-.01	.34	.23	.22	.28	.26	.56		.69	.58	.79	.13	.32	.48
10 Tool Functions	-.05	-.04	.36	.20	.18	.24	.20	.53	.69		.59	.79	.08	.26	.46
11 Mechanical Principles	.04	.12	.58	.34	.38	.48	.39	.65	.58	.59		.81	.31	.51	.72
12 Mechanical AI	.05	.11	.57	.63	.36	.44	.36	.66	.79	.79	.81		.29	.63	.69
13 Administrative AI	.40	.87	.29	.32	.43	.68	.59	.32	.13	.08	.31	.29		.69	.51
14 General AI	.20	.39	.51	.74	.51	.78	.73	.50	.32	.26	.51	.63	.69		.72
15 Electronics AI	.08	.29	.83	.46	.67	.71	.50	.76	.48	.46	.72	.69	.51	.72	
Mean	48.48	37.64	9.75	8.37	6.42	9.32	18.94	8.31	7.43	9.33	7.57	53.27	64.73	58.78	52.76
SD	3.11	13.60	4.15	4.19	2.17	3.63	6.37	3.18	3.25	3.36	3.34	22.43	18.37	19.84	22.72

Table 10. Intercorrelation Matrix AQE-F, Area 4

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.26	.13	.07	.17	.18	.15	.07	.03	.08	.08	.08	.42	.18	.17
2 Numerical Operations	.26		.21	.21	.38	.54	.30	.16	.03	.02	.11	.13	.87	.45	.36
3 Pattern Comprehension	.13	.21		.45	.42	.41	.35	.46	.36	.38	.53	.56	.35	.53	.84
4 Hidden Figures	.07	.21	.45		.28	.30	.27	.30	.26	.26	.35	.64	.28	.70	.47
5 Data Interpretation	.17	.38	.42	.28		.53	.38	.36	.24	.27	.37	.37	.50	.51	.68
6 Arithmetic Reasoning	.18	.54	.41	.30	.53		.46	.45	.29	.28	.46	.42	.72	.76	.70
7 Word Knowledge	.15	.30	.35	.27	.38	.47		.49	.37	.33	.42	.44	.65	.75	.53
8 Electrical Information	.07	.16	.46	.30	.36	.45	.49		.58	.54	.64	.65	.37	.54	.75
9 General Mechanics	.03	.03	.36	.26	.24	.29	.37	.58		.68	.64	.80	.21	.41	.50
10 Tool Functions	.08	.02	.38	.26	.27	.28	.33	.54	.68		.62	.80	.20	.38	.50
11 Mechanical Principles	.08	.11	.53	.35	.37	.46	.42	.64	.64	.62		.83	.31	.54	.67
12 Mechanical AI	.08	.13	.56	.64	.37	.42	.44	.65	.80	.40	.83		.32	.67	.69
13 Administrative AI	.42	.87	.35	.28	.50	.72	.65	.37	.21	.20	.31	.32		.72	.57
14 General AI	.18	.45	.53	.70	.51	.76	.75	.54	.41	.38	.54	.67	.72		.74
15 Electronics AI	.17	.36	.84	.47	.68	.70	.53	.75	.50	.50	.67	.69	.57	.74	
Mean	48.26	35.12	9.12	7.57	6.00	8.99	16.81	8.15	7.27	8.35	7.48	48.91	59.71	53.24	49.28
SD	3.56	13.26	4.23	4.06	2.20	3.64	7.06	3.03	3.04	3.38	3.31	22.37	19.46	20.21	22.31

Table 11. Intercorrelation Matrix AQE-F, Area 5

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.26	.13	.08	.18	.17	.14	.07	-.00	.01	.10	.06	.43	.16	.16
2 Numerical Operations	.26		.23	.23	.35	.53	.28	.07	-.04	-.06	.10	.08	.88	.45	.33
3 Pattern Comprehension	.13	.23		.43	.43	.50	.33	.44	.29	.35	.53	.54	.37	.54	.84
4 Hidden Figures	.08	.23	.43		.30	.35	.22	.24	.17	.17	.32	.59	.29	.72	.44
5 Data Interpretation	.18	.35	.43	.30		.56	.37	.38	.21	.24	.41	.39	.50	.53	.69
6 Arithmetic Reasoning	.17	.53	.50	.35	.56		.47	.44	.23	.23	.47	.43	.72	.79	.74
7 Word Knowledge	.14	.28	.33	.22	.37	.47		.46	.27	.24	.45	.39	.62	.72	.52
8 Electrical Information	.07	.07	.44	.24	.38	.44	.46		.55	.54	.66	.65	.30	.48	.74
9 General Mechanics	-.00	-.04	.29	.17	.21	.23	.27	.55		.66	.58	.78	.12	.28	.44
10 Tool Functions	.01	-.06	.35	.17	.24	.23	.24	.54	.66		.57	.78	.09	.26	.46
11 Mechanical Principles	.10	.10	.53	.32	.41	.47	.45	.66	.58	.57		.82	.33	.54	.69
12 Mechanical AI	.06	.08	.54	.59	.39	.43	.39	.65	.78	.78	.82		.28	.62	.68
13 Administrative AI	.43	.88	.37	.29	.50	.72	.62	.30	.12	.09	.33	.28		.70	.56
14 General AI	.16	.45	.54	.72	.53	.79	.72	.48	.28	.26	.54	.62	.70		.73
15 Electronics AI	.16	.33	.84	.44	.69	.74	.52	.74	.44	.46	.69	.68	.56	.73	
Mean	48.17	36.05	10.05	7.81	6.31	9.35	18.53	8.33	7.78	9.72	7.90	54.34	62.35	56.80	53.30
SD	3.77	13.77	4.23	4.07	2.17	3.63	6.61	3.08	3.20	3.26	3.29	21.61	19.35	19.82	22.84

Table 12. Intercorrelation Matrix AQE-F, Area 6

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.27	.10	.15	.16	.21	.20	.05	-.04	.01	.08	.07	.44	.23	.15
2 Numerical Operations	.27		.19	.33	.34	.51	.29	.18	.02	.03	.13	.18	.88	.48	.35
3 Pattern Comprehension	.10	.19		.44	.42	.46	.30	.44	.35	.37	.56	.58	.32	.52	.84
4 Hidden Figures	.15	.33	.44		.35	.39	.33	.33	.21	.22	.38	.66	.41	.77	.50
5 Data Interpretation	.16	.34	.42	.35		.51	.36	.34	.18	.17	.36	.36	.46	.52	.66
6 Arithmetic Reasoning	.21	.51	.46	.39	.51		.47	.47	.26	.24	.47	.45	.71	.78	.73
7 Word Knowledge	.20	.29	.30	.33	.36	.47		.41	.22	.15	.38	.36	.62	.73	.48
8 Electrical Information	.05	.18	.44	.33	.34	.47	.41		.52	.46	.66	.64	.34	.52	.75
9 General Mechanics	-.04	.02	.35	.21	.18	.26	.22	.52		.65	.57	.76	.13	.29	.46
10 Tool Functions	.01	.03	.37	.22	.17	.24	.15	.46	.65		.54	.76	.11	.25	.43
11 Mechanical Principles	.08	.13	.56	.38	.36	.47	.38	.66	.57	.54		.81	.30	.53	.69
12 Mechanical AI	.07	.18	.58	.66	.36	.45	.36	.64	.76	.76	.81		.32	.64	.69
13 Administrative AI	.44	.88	.32	.41	.46	.71	.62	.34	.13	.11	.30	.32		.72	.54
14 General AI	.23	.48	.52	.77	.52	.78	.73	.52	.29	.25	.33	.64	.72		.73
15 Electronics AI	.15	.35	.84	.50	.66	.73	.48	.75	.46	.43	.69	.69	.54	.73	
Mean	48.50	36.85	10.41	8.76	6.58	9.70	19.50	8.53	8.31	10.33	8.29	59.36	64.54	60.90	55.87
SD	3.05	14.65	4.19	4.30	2.09	3.55	6.65	3.09	3.20	3.10	3.25	21.55	19.60	20.56	22.51

Table 13. Intercorrelation Matrix AQE-F, Area 7

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.22	.06	.12	.10	.11	.19	.03	.01	.00	.03	.06	.39	.18	.08
2 Numerical Operations	.22		.19	.22	.27	.54	.27	.14	.02	.01	.15	.14	.88	.43	.33
3 Pattern Comprehension	.06	.19		.43	.41	.42	.31	.39	.35	.33	.53	.54	.31	.50	.82
4 Hidden Figures	.12	.22	.43		.31	.35	.28	.30	.27	.24	.38	.67	.32	.76	.48
5 Data Interpretation	.10	.27	.41	.31		.51	.35	.33	.23	.26	.38	.39	.41	.49	.66
6 Arithmetic Reasoning	.11	.54	.42	.35	.51		.46	.46	.31	.23	.47	.45	.71	.77	.72
7 Word Knowledge	.19	.27	.31	.28	.35	.46		.46	.29	.28	.40	.41	.62	.73	.50
8 Electrical Information	.04	.14	.39	.30	.33	.46	.46		.53	.49	.64	.63	.33	.52	.74
9 General Mechanics	.01	.02	.35	.27	.23	.31	.29	.53		.64	.59	.79	.17	.37	.49
10 Tool Functions	.00	.01	.33	.24	.26	.23	.28	.49	.64		.53	.76	.15	.32	.45
11 Mechanical Principles	.03	.15	.53	.38	.38	.47	.40	.64	.59	.53		.81	.31	.54	.70
12 Mechanical AI	.06	.14	.54	.67	.39	.45	.41	.63	.79	.76	.81		.32	.68	.69
13 Administrative AI	.39	.88	.31	.31	.41	.71	.62	.33	.17	.15	.31	.32		.69	.53
14 General AI	.18	.43	.50	.76	.49	.77	.73	.52	.37	.32	.54	.68	.69		.73
15 Electronics AI	.08	.33	.82	.48	.66	.72	.50	.74	.49	.45	.70	.69	.53	.73	
Mean	48.46	36.44	10.37	8.88	6.62	9.63	19.63	8.89	9.02	10.51	8.67	62.43	64.45	61.23	56.76
SD	3.05	13.47	4.01	4.20	1.99	3.50	6.22	3.07	3.14	2.97	3.29	21.31	18.37	19.53	21.74

Table 14. Intercorrelation Matrix AQE-F, Area 8

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.33	.27	.09	.34	.25	.27	.25	.25	.22	.27	.17	.48	.24	.24
2 Numerical Operations	.33		.27	.17	.34	.53	.28	.19	.12	.09	.18	.19	.86	.42	.38
3 Pattern Comprehension	.27	.27		.36	.58	.50	.43	.52	.45	.51	.62	.55	.42	.54	.80
4 Hidden Figures	.09	.17	.36		.19	.27	.20	.17	.14	.16	.22	.60	.25	.67	.40
5 Data Interpretation	.34	.34	.58	.19		.56	.51	.55	.45	.42	.61	.41	.50	.52	.69
6 Arithmetic Reasoning	.25	.53	.50	.27	.56		.54	.44	.32	.28	.48	.45	.74	.78	.74
7 Word Knowledge	.27	.28	.43	.20	.51	.54		.57	.42	.38	.53	.46	.66	.76	.59
8 Electrical Information	.25	.19	.52	.17	.55	.44	.57		.68	.65	.76	.59	.39	.48	.67
9 General Mechanics	.25	.12	.45	.14	.45	.32	.42	.68		.73	.72	.69	.27	.35	.44
10 Tool Functions	.22	.09	.51	.16	.42	.28	.38	.65	.73		.70	.74	.24	.32	.48
11 Mechanical Principles	.27	.18	.62	.22	.61	.48	.53	.76	.72	.70		.74	.18	.51	.65
12 Mechanical AI	.17	.19	.55	.60	.41	.45	.46	.59	.69	.74	.74		.40	.66	.70
13 Administrative AI	.48	.86	.42	.25	.50	.74	.66	.39	.27	.24	.38	.40		.72	.63
14 General AI	.24	.42	.54	.67	.52	.78	.76	.48	.35	.32	.51	.66	.72		.75
15 Electronics AI	.24	.38	.80	.40	.69	.74	.59	.67	.44	.48	.65	.70	.63	.75	
Mean	48.11	33.81	9.45	8.07	5.99	8.91	16.68	7.90	7.74	8.89	7.52	51.90	58.12	54.49	49.16
SD	3.92	12.91	4.56	4.01	2.56	3.69	7.43	3.79	3.60	3.63	3.93	21.60	19.85	20.05	23.30

Table 15. Intercorrelation Matrix AQE-F, Area 9

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.30	.06	.11	.14	.18	.15	.03	-.04	-.04	.03	.03	.43	.19	.12
2 Numerical Operations	.30		.24	.29	.39	.55	.28	.15	.00	-.01	.21	.18	.88	.48	.39
3 Pattern Comprehension	.06	.24		.49	.45	.48	.28	.41	.33	.37	.58	.59	.34	.55	.83
4 Hidden Figures	.11	.29	.49		.34	.41	.30	.33	.19	.22	.42	.65	.37	.77	.53
5 Data Interpretation	.14	.39	.45	.34		.54	.34	.36	.27	.29	.47	.45	.49	.52	.70
6 Arithmetic Reasoning	.18	.55	.48	.41	.54		.47	.44	.26	.27	.50	.48	.74	.79	.73
7 Word Knowledge	.15	.28	.28	.30	.34	.47		.49	.34	.26	.44	.43	.61	.72	.51
8 Electrical Information	.03	.15	.41	.33	.36	.44	.49		.57	.53	.62	.65	.34	.52	.74
9 General Mechanics	-.04	.00	.33	.19	.27	.26	.34	.57		.68	.60	.77	.15	.32	.49
10 Tool Functions	-.04	-.01	.37	.22	.29	.27	.26	.53	.68		.60	.78	.12	.30	.50
11 Mechanical Principles	.03	.21	.58	.42	.47	.50	.43	.62	.60	.60		.84	.38	.58	.73
12 Mechanical AI	.08	.18	.59	.65	.45	.48	.43	.65	.77	.79	.84		.34	.67	.73
13 Administrative AI	.43	.88	.34	.37	.49	.74	.61	.34	.15	.12	.38	.34		.72	.57
14 General AI	.19	.48	.55	.77	.52	.79	.72	.52	.32	.30	.58	.67	.72		.75
15 Electronics AI	.12	.39	.83	.53	.70	.73	.51	.74	.49	.50	.73	.73	.57	.75	
Mean	48.64	34.98	10.82	8.69	6.64	9.70	19.99	8.59	8.78	10.56	8.54	61.27	63.46	61.28	57.26
SD	2.78	14.28	4.11	4.26	2.12	3.64	6.33	3.13	3.17	3.06	3.33	21.64	19.69	20.53	22.60



**Table 16. Intercorrelation Matrix AQE-F, Female Enlistees**

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Clerical Matching		.16	.05	.04	.08	.06	.05	.06	.03	.01	.04	.04	.25	.06	.08
2 Numerical Operations	.16		.17	.18	.25	.36	.15	.12	.06	.11	.14	.19	.88	.32	.30
3 Pattern Comprehension	.06	.18		.37	.37	.39	.22	.27	.17	.30	.39	.46	.29	.47	.83
4 Hidden Figures	.04	.18	.37		.27	.22	.10	.17	.13	.20	.26	.68	.21	.73	.39
5 Data Interpretation	.08	.25	.37	.27		.42	.24	.22	.10	.16	.27	.31	.36	.43	.64
6 Arithmetic Reasoning	.06	.36	.38	.22	.42		.28	.31	.12	.18	.37	.33	.58	.69	.66
7 Word Knowledge	.05	.15	.22	.10	.24	.28		.28	.19	.24	.31	.30	.51	.58	.35
8 Electrical Information	.06	.12	.26	.17	.22	.31	.28		.39	.42	.48	.47	.25	.34	.60
9 General Mechanics	.03	.06	.17	.13	.10	.12	.19	.39		.49	.43	.64	.13	.20	.28
10 Tool Functions	.01	.11	.30	.20	.16	.18	.24	.42	.49		.50	.69	.19	.28	.40
11 Mechanical Principles	.04	.14	.38	.26	.27	.37	.31	.48	.43	.50		.74	.28	.44	.54
12 Mechanical AI	.04	.19	.45	.68	.31	.33	.30	.47	.64	.69	.74		.30	.66	.58
13 Administrative AI	.25	.88	.29	.21	.36	.58	.51	.25	.13	.19	.28	.30		.58	.48
14 General AI	.06	.32	.47	.73	.43	.68	.58	.34	.20	.28	.44	.66	.58		.65
15 Electronics AI	.08	.30	.82	.39	.64	.66	.35	.60	.28	.40	.54	.58	.48	.65	
Mean	49.40	39.78	8.95	8.70	6.59	9.40	22.39	5.23	3.33	3.96	4.31	27.20	71.20	64.12	42.78
SD	1.41	12.04	4.13	4.12	2.06	3.13	5.14	2.38	2.26	2.34	2.58	15.80	14.34	15.80	18.44

**Table 17. Distribution of Aptitude Indexes AQE-F Census Group**

Percentile Score	Mechanical	Administrative	General	Electronics
95	139	278	231	222
90	118	234	164	72
85	177	329	173	148
80	218	417	215	236
75	151	200	229	208
70	190	286	400	236
65	284	443	265	121
60	357	337	307	238
55	231	292	331	311
50	110	433	333	307
45	394	317	357	310
40	336	305	376	341
35	243	325	314	351
30	283	165	312	353
25	345	173	494	489
20	474	288	287	386
15	751	216	250	485
10	295	167	149	537
05	147	22	68	14
01	48	62	36	6
Total	5291	5291	5291	5291
Mean	41.64	54.53	49.04	52.96
SD	25.53	24.82	24.24	25.04

**APPENDIX II**  
**TEST DATA FOR AQE-62 SAMPLES**  
**TABLES 18-21**

Table 18. Distribution of Aptitude Indexes AQE-62, Percentiles for Males Before 1 March 1963

Percentile Score	Mechanical		Administrative		General		Electronic	
	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %
95	251	4.61	391	7.18	311	5.71	328	6.03
90	213	8.53	390	14.35	274	10.75	194	9.59
85	183	11.89	554	24.53	347	17.13	217	13.58
80	346	18.25	569	34.99	281	22.29	268	18.50
75	229	22.45	291	40.33	263	27.12	239	22.90
70	416	30.10	228	44.52	443	35.26	280	28.04
65	296	35.54	442	52.65	321	41.16	280	33.19
60	308	41.20	389	59.79	430	49.06	268	38.11
55	407	48.68	283	64.99	292	54.43	299	43.61
50	280	53.82	523	74.60	432	62.37	295	49.03
45	277	58.91	293	79.99	305	67.97	294	54.43
40	460	67.36	358	86.57	392	75.17	414	62.04
35	259	72.12	213	90.48	300	80.69	282	67.22
30	243	76.59	157	93.37	508	90.02	302	72.77
25	209	80.43	82	94.87	152	92.82	261	77.56
20	309	86.11	106	96.82	187	96.25	248	82.12
15	371	92.93	85	98.38	119	98.44	428	89.99
10	203	96.66	38	99.04	61	99.56	422	97.74
5	61	97.78	7	99.21	13	99.80	47	98.60
0	121	100.00	43	100.00	11	100.00	75	99.98
Totals								
Total	5,442		5,442		5,442		5,442	
Mean	50.22		62.84		56.30		48.27	
SD	25.76		22.33		22.97		26.83	

Continued

Table 19. Distribution of Aptitude Indexes AQF-62, Percentiles for Males After 1 March 1963

Percentile Score	Mechanical			Administrative			General			Electronic		
	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %
95	279	5.19	244	4.54	328	6.10	333	6.20				
90	243	9.72	359	11.22	264	11.02	204	9.99				
85	196	13.36	409	18.83	339	17.33	223	14.14				
80	367	20.19	308	24.57	281	22.56	261	19.00				
75	298	25.74	231	28.87	298	28.10	243	23.53				
70	463	34.36	466	37.54	451	36.50	259	28.35				
65	319	40.29	242	42.04	340	42.83	271	33.39				
60	316	46.18	464	50.68	455	51.29	292	38.82				
55	453	54.79	325	56.73	301	56.90	330	44.97				
50	104	60.43	296	62.24	410	64.53	326	51.03				
45	336	66.70	310	68.01	249	69.16	265	55.97				
40	472	75.49	395	75.36	384	76.31	443	64.21				
35	219	79.56	289	80.74	279	81.50	285	69.51				
30	214	83.55	432	88.78	442	89.73	270	74.54				
25	209	87.44	208	92.65	151	92.54	256	79.30				
20	239	91.89	136	95.18	176	95.81	238	83.73				
15	276	97.02	87	96.80	129	98.21	414	91.44				
10	94	98.77	72	98.14	70	99.52	359	98.12				
5	31	99.35	22	98.55	17	99.83	61	99.26				
1	35	100.00	77	99.98	9	100.00	40	100.00				
Unknown			1	100.00								
Total	5,373		5,373		5,373		5,373		5,373			
Mean	54.51		56.59		56.99		49.28					
SD	23.91		23.80		23.04		26.45					

Table 20. Distribution of Aptitude Indexes AQE-62, Percentiles for Females Before 1 March 1963

Percentile Score	Mechanical		Administrative		General		Electronic	
	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %
95	2	.07	164	5.80	96	3.40	15	.53
90	2	.14	167	11.71	97	6.83	18	1.17
85	2	.21	284	21.76	128	11.36	31	2.26
80	5	.39	275	31.49	112	15.32	40	3.68
75	9	.71	147	36.69	116	19.43	64	5.94
70	23	1.52	153	42.11	248	28.20	78	8.70
65	23	2.34	267	51.56	160	33.86	88	11.82
60	31	3.43	241	60.08	254	42.85	108	15.64
55	81	6.30	169	66.07	172	48.94	142	20.67
50	54	8.21	279	75.94	246	57.64	131	25.30
45	92	11.46	148	81.17	166	63.52	137	30.15
40	218	19.18	180	87.54	192	70.31	247	38.89
35	206	26.47	95	90.91	195	77.21	193	45.72
30	246	35.17	95	94.27	290	87.47	209	53.11
25	266	44.59	42	95.75	109	91.33	213	60.65
20	465	61.04	48	97.45	126	95.79	213	68.19
15	598	82.20	32	98.58	80	98.62	399	82.31
10	257	91.30	21	99.33	29	99.65	385	95.93
5	115	95.36	4	99.47	6	99.86	44	97.49
1	131	100.00	15	100.00	4	100.00	71	100.00
Unknown								
Total	2,826		2,826		2,826		2,826	
Mean	24.55		62.39		52.58		33.43	
SD	15.21		21.20		21.91		21.51	

Table 21. Distribution of Aptitude Indexes AQE-62, Percentiles for Females After 1 March 1963

Percentile Score	Mechanical		Administrative		General		Electronic	
	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %	Number	Accumulative %
95			82	3.02	69	2.54	11	.40
90	2	.07	145	8.35	95	6.03	14	.92
85	1	.11	180	14.97	143	11.29	34	2.17
80	6	.33	167	21.11	137	16.33	48	3.94
75	4	.48	129	25.86	150	21.85	49	5.74
70	17	1.10	263	35.53	218	29.86	68	8.24
65	16	1.69	147	40.93	169	36.08	105	12.10
60	35	2.98	238	49.59	228	44.46	109	16.11
55	82	5.99	171	55.98	162	50.42	135	21.07
50	69	8.53	180	62.60	236	59.10	136	26.08
45	101	12.25	130	67.38	144	64.40	157	31.85
40	277	22.43	238	76.13	220	72.49	237	40.57
35	197	29.68	176	82.60	172	78.82	188	47.48
30	251	38.91	239	91.39	261	88.41	211	55.24
25	312	50.39	87	94.59	97	91.98	213	63.07
20	424	65.98	56	96.65	106	95.88	181	69.73
15	567	86.83	33	97.87	64	98.23	390	84.08
10	189	93.78	21	98.64	36	99.56	340	96.58
5	64	96.14	12	99.08	8	99.85	38	97.98
1	105	100.00	25	100.00	3	99.96	55	100.00
Unknown			1	100.00				
Total	2,719		2,719		2,719		2,719	
Mean	25.92		56.13		53.38		34.19	
SD	14.64		22.19		21.80		21.23	

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